



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

FERNALD

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FILE:

REPLY TO THE ATTENTION OF

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JUN 16 1999

Mr. Johnny W. Reising  
United States Department of Energy  
Feed Materials Production Center  
P.O. Box 398705  
Cincinnati, Ohio 45239-8705

SRF-5J

RE: Draft Final OU 1 RA

Dear Mr. Reising:

The United States Environmental Protection Agency (U.S. EPA) has completed its review of the United States Department of Energy's (U.S. DOE) draft final Operable Unit (OU) 1 Remedial Action (RA) Package and Responses to Comments (RTC).

The RA package and RTC were revised based on U.S. EPA and Ohio Environmental Protection Agency (OEPA) comments on the draft RA package. Based on earlier comments and subsequent meetings and discussions, the sampling and analysis plan was completely rewritten from the original draft RA submittal. Also, U.S. EPA has reviewed the responses to the OEPA comments and is aware of OEPA's position on the mixed waste issue for the waste pit materials in OU 1. U.S. EPA concurs with OEPA's position on this issue.

Overall, the RTC adequately addressed U.S. EPA's previous comments and incorporated them into the RA package. However, U.S. EPA has several comments on the revised sampling and analysis plan. Therefore, U.S. EPA disapproves the draft final RA package, pending receipt and incorporation of adequate responses to the attached comments.

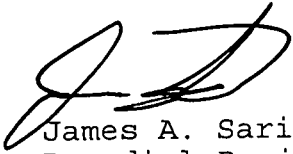
U.S. DOE must submit a response to comments and a revised sampling and analysis plan within thirty (30) days receipt of this letter.

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Please contact me at (312) 886-0992 if you have any questions regarding this matter.

Sincerely,



James A. Saric  
Remedial Project Manager  
Federal Facilities Section  
SFD Remedial Response Branch #2

Enclosure

cc: Tom Schneider, OEPA-SWDO  
Bill Murphie, U.S. DOE-HDQ  
John Bradburne, FERMCO  
Terry Hagen, FERMCO  
Tom Walsh, FERMCO

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### GENERAL COMMENT

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: Not Applicable (NA) Page #: NA                Line #: NA  
Original General Comment #: 1

Comment: In the "Sampling and Analysis Plan" (SAP) and other documents within the remedial action (RA) package, greater document conciseness and consistency could be achieved by citing the "Sitewide Comprehensive Environmental Response, Compensation, and Liability Act Quality Assurance Project Plan" (SCQ) instead of presenting tables and text. Similar Fernald Environmental Management Project (FEMP) documents, such as those for the Soil Characterization and Excavation Project, have benefited from such citation of the SCQ. The RA package should be revised to incorporate appropriate citation of the SCQ and to include project-specific information only when the SCQ does not contain the necessary procedures, standards, or other material. In addition, the SCQ citation on Page 4 of the "Overview of Remedial Action Package" should be revised to reflect the current edition of the SCQ (Revision 1, September 1998) rather than the original edition (Revision 0, May 1994).

TECHNICAL REVIEW COMMENT ON  
"OVERVIEW OF REMEDIAL ACTION PACKAGE"

**SPECIFIC COMMENT**

Commenting Organization: U.S. EPA Commentor: Saric  
Section #: 5.0 Page #: 4 Line #: NA  
Original Specific Comment #: 1

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Comment: The list of references includes a number of ambiguous entries. For instance, Lines 15 and 22 both use "DOE (1994)," while Line 19 uses "DOE (1994b)." Similarly, Lines 25 and 28 both use "DOE (1995)." This listing should be revised to provide proper, unambiguous entries for all references, and the corrected entries should be properly cited in the various documents of the RA package.

TECHNICAL REVIEW COMMENT ON  
"SAMPLING AND ANALYSIS PLAN"

GENERAL COMMENT

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: NA                      Page #: NA                      Line #: NA  
Original General Comment #: 1

Comment: The selection of radionuclides of concern and methods to be used to analyze for these isotopes presents concerns that should be addressed. The waste pit material SAP states that the material removed may be indicative of enriched uranium. If this is the case, higher activity contributions from uranium 234 and uranium 235 would be evident that would not occur with depleted or natural uranium. Therefore, it is not clear why total uranium analysis was selected for environmental media samples. Although this analytical method may provide accurate uranium concentrations on a weight basis, it will not allow evaluation of the higher specific activity uranium isotopes. If isotopic uranium analysis is specified for the waste pit materials, the same method should be specified for environmental media.

In addition, contingency analyses for the presence of unspecified isotopes should be incorporated into the SAPs. The waste pits served as disposal cells for waste generated throughout the FEMP site. Therefore, any radioisotopes handled on the site during the years of waste pit operations could have made their way into the waste pits. Although site production facilities primarily handled uranium, thorium, and their daughter isotopes, site laboratories and research facilities may have handled a larger array of radionuclides. For this reason, the SAPs should specify a gross analytical method, such as gamma spectrometry, for both waste pit materials and environmental media.

TECHNICAL REVIEW COMMENTS ON  
"SAMPLING AND ANALYSIS PLAN FOR ENVIRONMENTAL MEDIA"

SPECIFIC COMMENTS

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.3                      Page #: 7                      Line #: NA  
Original Specific Comment #: 1

Comment: Although radium 226 must be monitored and reported under WPRAP, no acceptance criterion is specified for this isotope. This omission should be justified. Furthermore, technetium 99 may be present in reprocessed uranium.



(under its former name, "Feed Materials Production Center") in the "Designation of Facilities" section of Subpart Q. The SAP should be revised to discuss how compliance with the 20 picocuries per square meter per second standard for radon listed in Subpart Q will be verified.

TECHNICAL REVIEW COMMENTS ON  
"SAMPLING AND ANALYSIS PLAN FOR WASTE PIT MATERIALS"

**SPECIFIC COMMENTS**

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.3.2                      Page #: 9                      Line #: 29  
Original Specific Comment #: 1

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Comment: The text discusses use of a gamma scanner to provide a 100 percent evaluation of individual bin composites. In addition to evaluating gamma-emitting target radionuclides, this scanner is intended to provide information regarding the enrichment status of uranium. However, the text provides little information on how this scanner is to be used. The text should be revised to provide additional information on the specific technical capabilities and limitations, including detection limits, of this scanner.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.3.3                      Page #: 11                      Line #: 45  
Original Specific Comment #: 2

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Comment: The text states that IT Corporation (IT) will conduct all radiological analyses, physical tests, and pH measurements of waste pit materials at its on-site laboratory. However, the SAP for environmental media states that both IT and an off-site, independent laboratory will be used for analysis of environmental media. It is therefore not clear why only IT is specified for laboratory analysis of waste pit materials. The rationale for this approach should be discussed in the text.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Section #: 2.5                      Page #: 13                      Line #: 12 and 13  
Original Specific Comment #: 3

Comment: The text lists actinium 228 in parentheses after thorium 228, thorium 232, and radium 228 as well as an independent entry of actinium 228. It is not clear whether these notations mean that the activities of these thorium and radium isotopes will be estimated based on the measured actinium isotope activity under the assumption of secular equilibrium or something else is intended. As radium 228 has a half-life of 5.8 years, an assumption of secular equilibrium might not be valid for the waste pit materials.

Commenting Organization: U.S. EPA  
Section #: 2.5 Page #: 13  
Original Specific Comment #: 4  
Comment: The text discusses low specific activity (LSA) determinations for certain isotopes. The text should be revised to include LSA determinations for uranium 233, technetium 99, and strontium 90. LSA determination for strontium 90 is recommended because the text specifies analysis for cesium, and these two long-lived fission products are generally found together.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Tables #: 2.2 and 2.5                      Page #: 22 and 25                      Line #: NA  
Original Specific Comment #: 5  
Comment: These tables list analytical parameters. However, they do not include actinium 228, analysis for which is listed in Section 2.5 as being necessary to determine whether waste meets the LSA type I definition. The tables should be revised to include actinium 228.

Commenting Organization: U.S. EPA  
Table #: 2.4  
Original Specific Comment #: 6  
Comment: This table presumably summarizes analytical methods and related information. However, the table was omitted from the review copy received. Even if some information, such as the laboratories to be used, is not yet available, the table should be submitted for review.

Commenting Organization: U.S. EPA  
Table #: 2.6 Page #: 26  
Original Specific Comment #: 7  
Comment: This table lists QC requirements for radiochemical analyses. The table notes state that the final calibration verification (FCV) involves use of the same material as the initial calibration verification (ICV). However, the ICV is specified as including at least four peaks from 40 to 2,600 kiloelectronvolts (keV), while the FCV is specified as including at least four peaks from 42 to 1,596 keV. This discrepancy should be reconciled.

Commenting Organization: U.S. EPA                      Commentor: Saric  
Table #: 2.8                      Page #: 27                      Line #: NA  
Original Specific Comment #: 8  
Comment: This table lists an acceptance limit for duplicate pH measurements of 20 percent RPD. This acceptance limit is not appropriate for logarithmic units such as pH units. The

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table should instead list the  $\pm 0.2$  pH unit criterion given in Table G-2 of the SCQ.